

For Information

Legislative Council Panel on Transport

Hong Kong – Zhuhai – Macao Bridge and North Lantau Highway Connection

Purpose

This paper informs Members of the outcome of our consultation with the Islands District Council on the Hong Kong – Zhuhai – Macao Bridge (HZMB) and the North Lantau Highway Connection (NLHC), and provides Members with supplementary information on the alignment options for the NLHC.

Background

2. At the meeting of the Panel on 27 May 2005, we updated Members on the progress of the advance work for the HZMB and the NLHC, and sought Members' support for a funding application to be made to the Public Works Subcommittee and the Finance Committee for the conceptual design of and advance technical studies for the HZMB. At the request of the Panel, we undertook to consult the Islands District Council on the alignment options for the HZMB and the NLHC prior to the PWSC meeting. We also agreed to provide additional information on the alignment options for the NLHC.

Consultation with the Islands District Council

3. On 2 June 2005, we consulted the Islands District Council on the alignment options for the HZMB and the NLHC.

4. Some of the Members of the Islands District Council who had spoken expressed a strong wish that the HZMB would help to improve the transport link between Tai O, as well as areas such as San Shek

Wan/Sha Lo Wan in Northwest Lantau, Tung Chung and other areas of Lantau. They hoped that the Southern alignment option, which is in closer proximity to Tai O, would be adopted for the HZMB such that there would be more room for the future provision of a slip road to connect Tai O and the adjacent villages to the transport network of North Lantau. Some other Members of the Islands District Council considered the Northern alignment acceptable and that local traffic concerns should be dealt with separately from the HZMB project since the HZMB would be a strategic, regional transport infrastructure not designed to serve local transport demand.

Response of the Government

Purpose and Nature of the HZMB

5. As we have explained to Members of the Panel as well as the Islands District Council, the HZMB is a strategic road link connecting Hong Kong with Zhuhai. Its functions are to enhance the economic and social integration between Hong Kong and the Pearl River West, in particular Macao and Zhuhai; to reinforce Hong Kong's status as a regional shipping and aviation centre; as well as to promote the development of the logistics, tourism and financial service sectors of Hong Kong. As regards the nature of the project, the HZMB is a cross-boundary expressway. With a design speed of 100 km per hour, the HZMB is not designed to serve local villages.

Process of Determining the HZMB Alignment

6. We have also explained that the HZMB will connect the three places of Hong Kong, Zhuhai and Macao. Its alignment has to be agreed by the three governments, or else the project could not be implemented. Since the alignment and landing points involve important interests of the three sides, in order to maintain impartiality in the decision-making process, the National Development and Reform Commission of the Central Government had organized an Expert Panel Meeting on the HZMB Alignment in Zhuhai in early April this year.

The Expert Panel consisted of experts from the three places. After thorough examinations and discussions for two days, the Expert Panel unanimously recommended the Northern bridge-cum-tunnel alignment option, taking into account various considerations such as air draught requirements for navigation, airport height restrictions, development needs of the ports in Guangzhou, operation of anchorage areas, environment and hydrology.

Comparison between Northern and Southern Alignments

7. We have pointed out that the Northern alignment has stood out in the evaluation and won the acceptance of the three governments and the Expert Panel because it outperforms the other options insofar as the key considerations, such as environmental protection, shipping development and technical feasibility, are concerned. Adopting the bridge-cum-tunnel option will not pose any constraints on the ports in Guangzhou and the shipyards thereat. Within Hong Kong, the Northern alignment will also cause the least disturbance to the natural shoreline of Lantau.

8. The Southern alignment is not recommended because it requires a full bridge structure, which will pose constraints on the ports in Guangzhou and the shipyards thereat. Within Hong Kong, the Southern alignment option, if adopted, would run along the existing natural shoreline of West Lantau from Tai O to San Shek Wan, leading to significant visual impacts on the natural coast of West Lantau. In addition, the option will be very close to a proposed marine park at Fan Lau in Southwest Lantau as well as to the waters more frequented by Chinese White Dolphins within Hong Kong's boundary. It will give rise to very significant problems for conserving the nature and ecology of Lantau.

Condition of Tai O and Villages in Northwest Lantau

9. The population of the several villages in Northwest Lantau, including San Tau, Shan Lo Wan, San Shek Wan and Shum Wat, is around 200. The Government's planning intention for the area is to

preserve their natural attributes. There is no plan to develop the area in such a way as will significantly increase its population. Therefore, even putting the nature conservation and environmental protection problems aside, the population thereat would be too small to justify the provision of a slip road from the HZMB to Tai O. For Tai O, the improvement to Tung Chung Road will be completed by end 2006, and by then traffic between Tai O and Tung Chung will be significantly improved. Moreover, the Government will also carry out local improvements to Keung Shan Road and South Lantau Road with a view to further improving the local traffic infrastructure in the area.


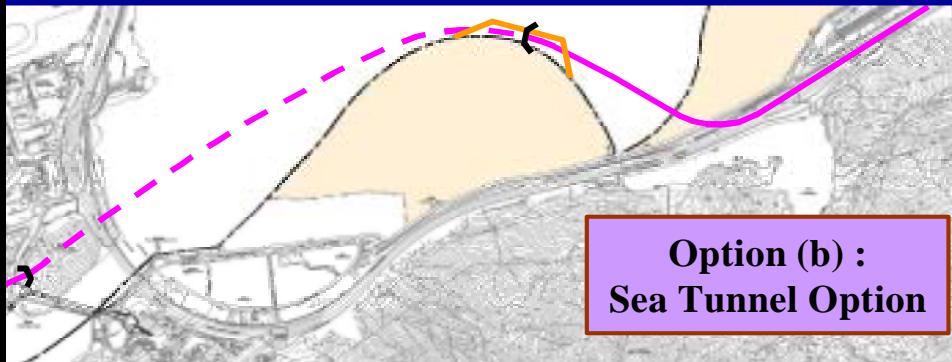
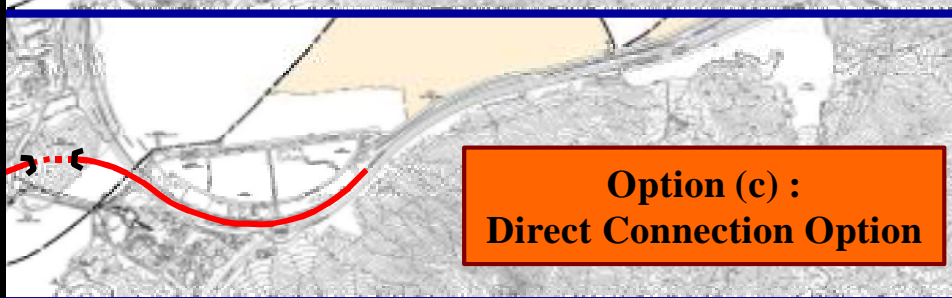
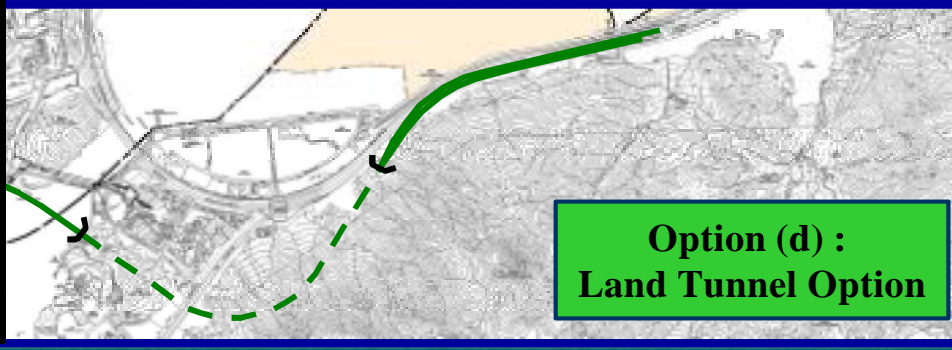
The Government's Pledge

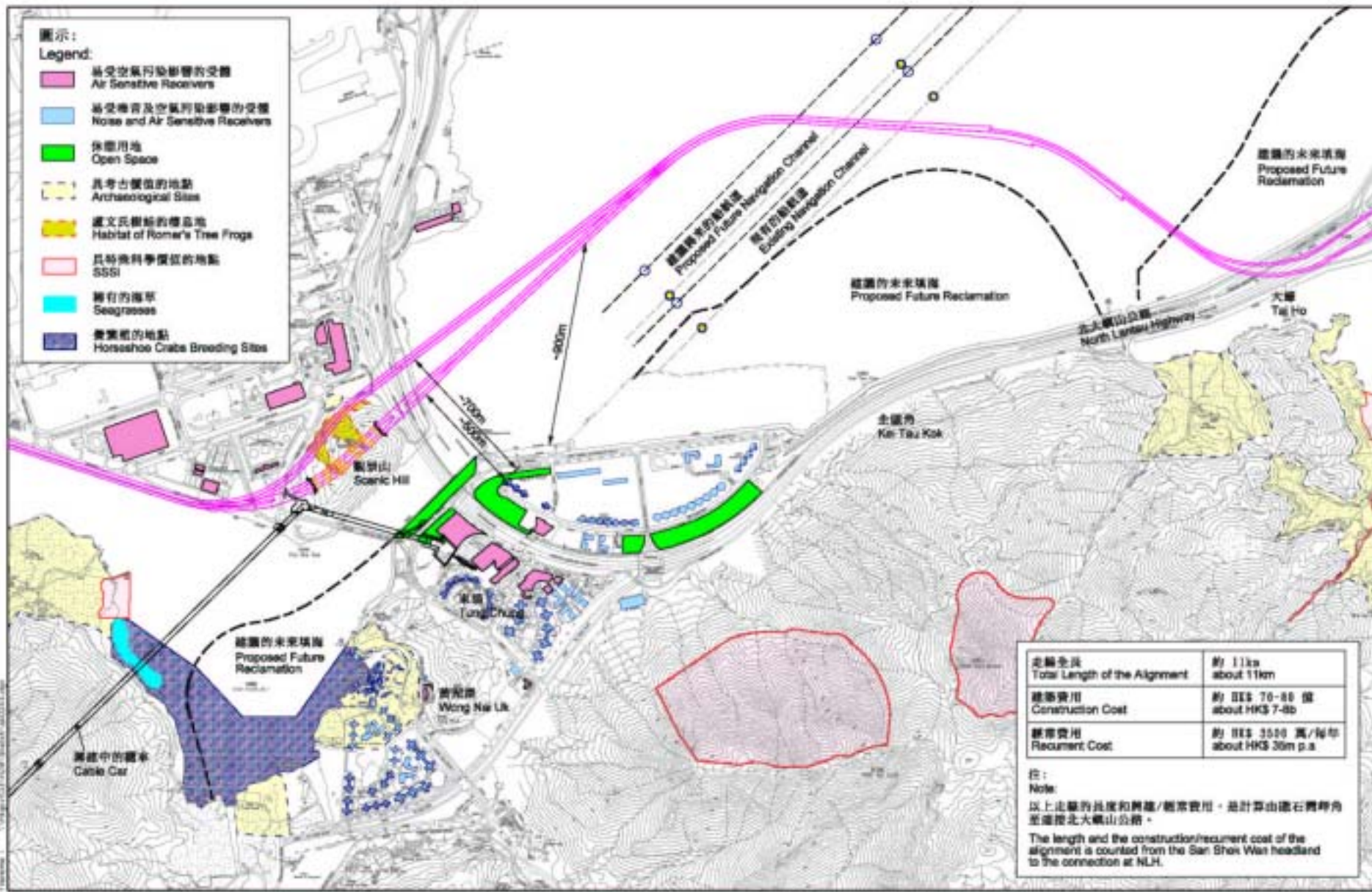
10. We will closely monitor developments on Lantau and changes in traffic demand, and review the level of provision of local transport infrastructure and services in a timely manner.

Alignment Options for the NLHC

11. At Member's request, we have set out more information on the four proposed alignment options for the eastern section of the NLHC at **Annex A**. The impacts of these alignment options on the existing and future North Lantau new town development are shown in **Annex B**.

Environment, Transport and Works Bureau
7 June 2005

| | | | |
|--|---|---|--|
| <p>Advantages</p> <ul style="list-style-type: none"> • Farthest away from Tung Chung • An open highway is a more favourable option from constructability, usage, operation and maintenance points of view | <p>Disadvantages</p> <ul style="list-style-type: none"> • Some impact on Tung Chung seaview (though some distance away) |  <p>Option (a) : Viaduct Option</p> | <p>Total Length ~ 11km</p> <p>Construction Cost ~ HK\$ 7-8b</p> <p>Recurrent Cost ~ HK\$ 35m p.a.</p> |
| <p>Advantages</p> <ul style="list-style-type: none"> • This will be in tunnel form in the sea, and there will be no impact on Tung Chung seaview | <p>Disadvantages</p> <ul style="list-style-type: none"> • Significant risk of settlement for the tunnel due to cavities found in the seabed of the eastern waters • A tunnel structure is less favourable from constructability, usage, operation and maintenance points of view |  <p>Option (b) : Sea Tunnel Option</p> | <p>Total Length ~ 11km (including ~3km tunnel)</p> <p>Construction Cost ~ HK\$ 9-10b</p> <p>Recurrent Cost ~ HK\$ 50m p.a.</p> |
| <p>Advantages</p> <ul style="list-style-type: none"> • Shortest in length and least costly | <p>Disadvantages</p> <ul style="list-style-type: none"> • Closest to Tung Chung residents • Need to close two existing slip roads at Tung Chung New Town |  <p>Option (c) : Direct Connection Option</p> | <p>Total Length ~ 6.5km (including ~0.3km tunnel)</p> <p>Construction Cost ~ HK\$ 4b</p> <p>Recurrent Cost ~ HK\$ 25m p.a.</p> |
| <p>Advantages</p> <ul style="list-style-type: none"> • Avoid impact on Tung Chung seaview | <p>Disadvantages</p> <ul style="list-style-type: none"> • A tunnel structure is less favourable from constructability, usage, operation and maintenance points of view • Affect pavilion and graves at the hillside of Wong Nai Uk and a planned town park |  <p>Option (d) : Land Tunnel Option</p> | <p>Total Length ~ 8.5km (including ~2.5km tunnel)</p> <p>Construction Cost ~ HK\$ 6b</p> <p>Recurrent Cost ~ HK\$ 45m p.a.</p> |



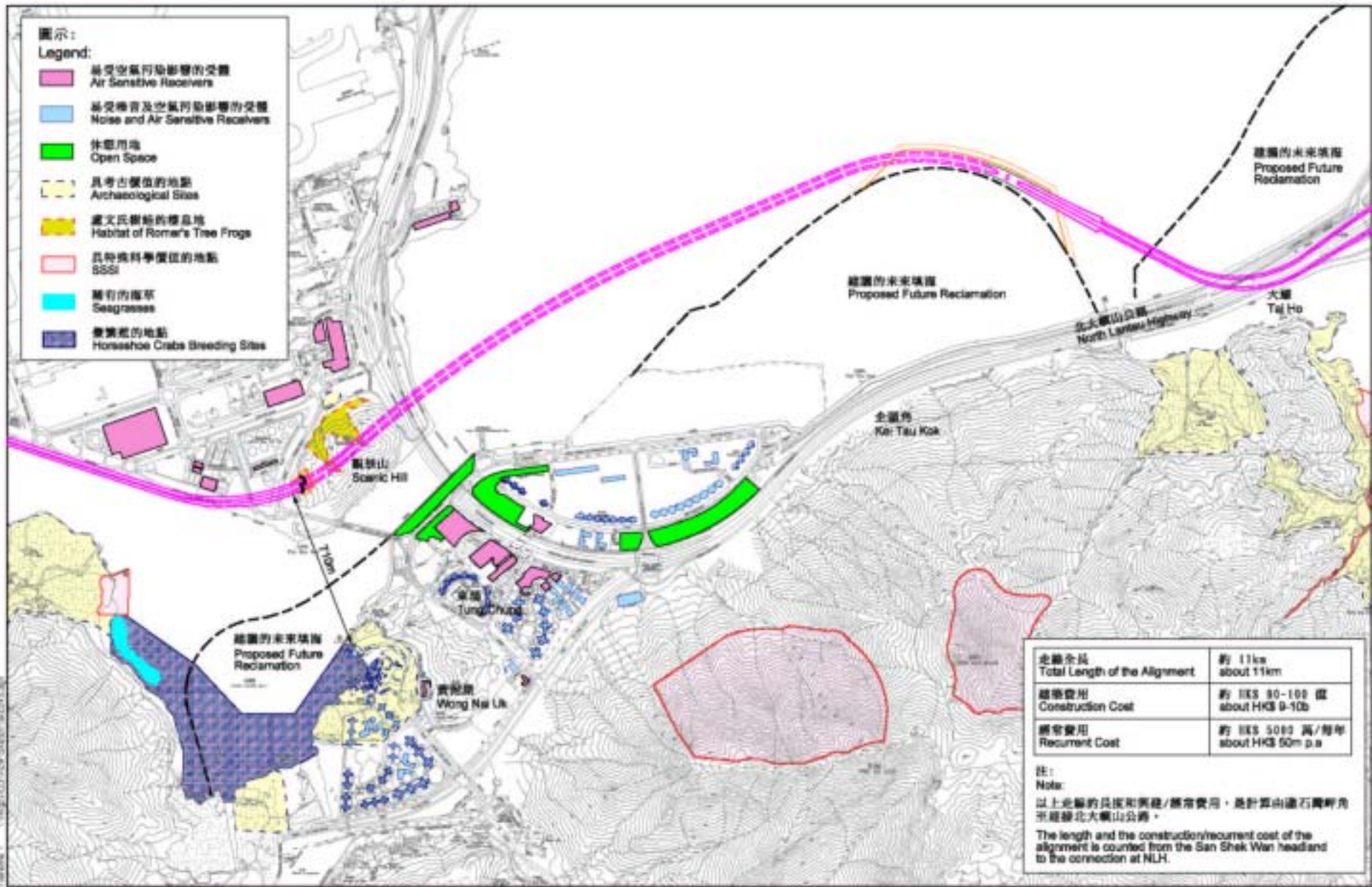
- 圖示:**
Legend:
- 易受空氣污染影響的受體
Air Sensitive Receivers
 - 易受噪音及空氣污染影響的受體
Noise and Air Sensitive Receivers
 - 休憩用地
Open Space
 - 具考古價值的地點
Archaeological Sites
 - 羅文氏樹蛙的棲息地
Habitat of Romer's Tree Frog
 - 具特殊科學價值的地點
SSSI
 - 耕作的海草
Seagrasses
 - 蟹籠的地點
Horseshoe Crabs Breeding Sites

| | |
|---------------------------------------|--|
| 走廊全長 Total Length of the Alignment | 約 11km about 11km |
| 建造費用 Construction Cost | 約 HK\$ 70-80 億 about HK\$ 7-8b |
| 經常費用 Recurrent Cost | 約 HK\$ 3500 萬/每年 about HK\$ 35m p.a |

注:
Note

以上走廊的全長和興建/經常費用，是計算由鑽石灣頭向至連接北大嶼山公路。

The length and the construction/recurrent cost of the alignment is counted from the San Shek Wan headland to the connection at NLH.

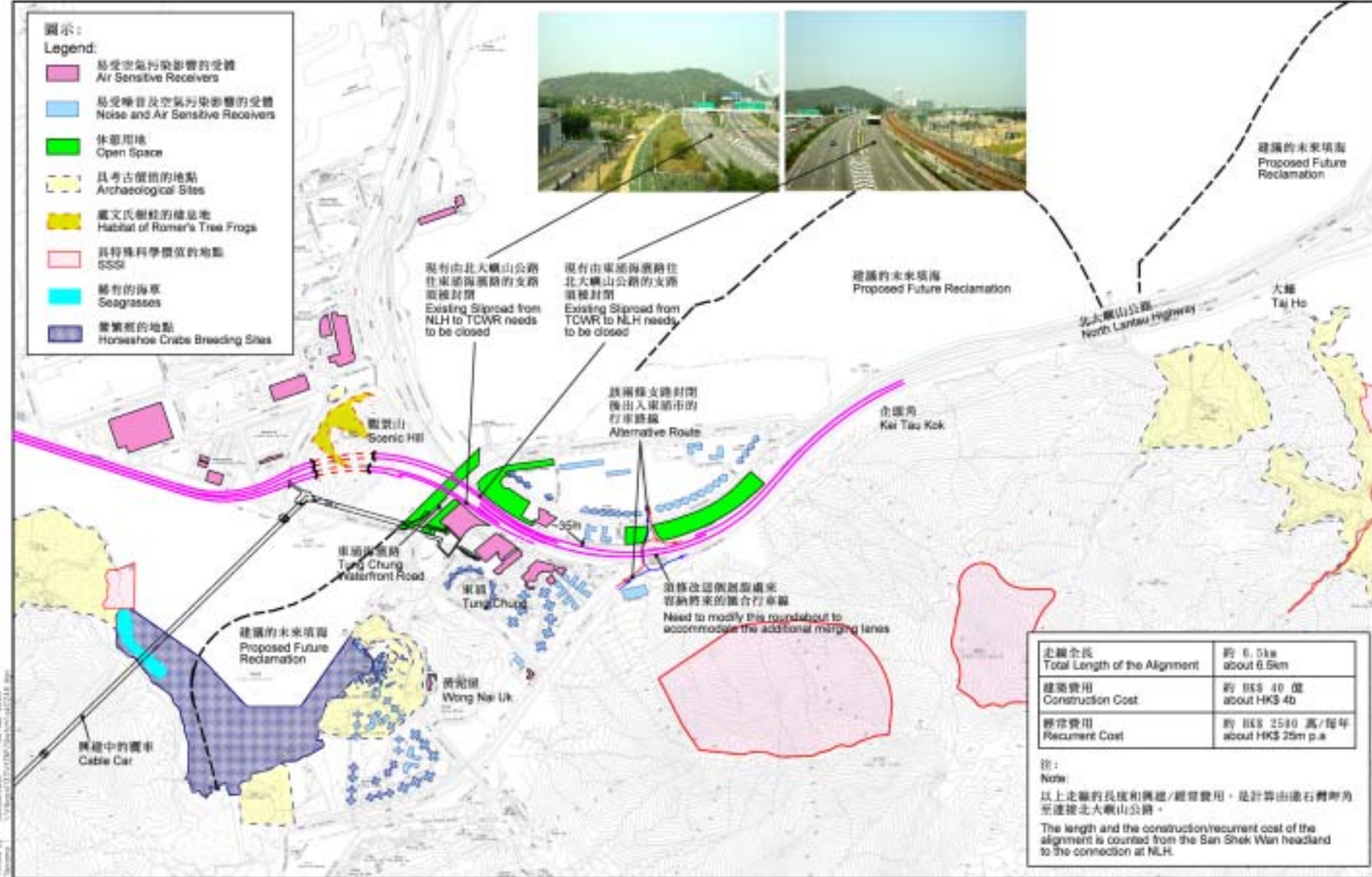


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|---------------------------------------|--|
| 總線全長 Total Length of the Alignment | 約 11km about 11km |
| 總額費用 Construction Cost | 約 HK\$ 80-100 億 about HK\$ 8-10b |
| 經常費用 Recurrent Cost | 約 HK\$ 5000 萬/每年 about HK\$ 50m p.a |

註:
Note:
以上總線的長度和興建/經常費用, 是計算由達石灣畔角
至經接北大嶼山公路。
The length and the construction/recurrent cost of the
alignment is counted from the San Shek Wan headland
to the connection at NLH.

Prepared by: [unreadable]
 Date: 05-Jan-2005
 Version: [unreadable]

- 圖示:**
Legend:
- 易受空氣污染影響的受體
Air Sensitive Receivers
 - 易受噪音及空氣污染影響的受體
Noise and Air Sensitive Receivers
 - 休憩用地
Open Space
 - 具考古價值的地點
Archaeological Sites
 - 龐文氏樹蛙的棲息地
Habitat of Romer's Tree Frogs
 - 具特殊科學價值的地點
SSSI
 - 特有的海草
Seagrasses
 - 蟹蟹的地點
Horseshoe Crabs Breeding Sites



現有由北大嶼山公路
往東涌海濱路之支路
須被封閉
Existing Sliproad from
NLH to TCWR needs
to be closed

現有由東涌海濱路往
北大嶼山公路之支路
須被封閉
Existing Sliproad from
TCWR to NLH needs
to be closed

該兩條支路封閉
後出入東涌市的
行車路線
Alternative Route

須修改這個圓形交叉
容納將來的混合行車
Need to modify this roundabout to
accommodate the additional merging lanes

| | |
|---------------------------------------|--|
| 走廊全長 Total Length of the Alignment | 約 6.5km about 6.5km |
| 建築費用 Construction Cost | 約 HK\$ 40 億 about HK\$ 4b |
| 經常費用 Recurrent Cost | 約 HK\$ 2500 萬/每年 about HK\$ 25m p.a |

注:
以上走廊的長度和興建/經常費用, 是計算由鑽石灣角
至連接北大嶼山公路。
The length and the construction/recurrent cost of the
alignment is counted from the San Shek Wan headland
to the connection at NLH.

Prepared by:
 Checked by:
 Approved by:

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HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理局
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

ARUP 奧雅納工程顧問
One Arup & Partners
Hong Kong Limited

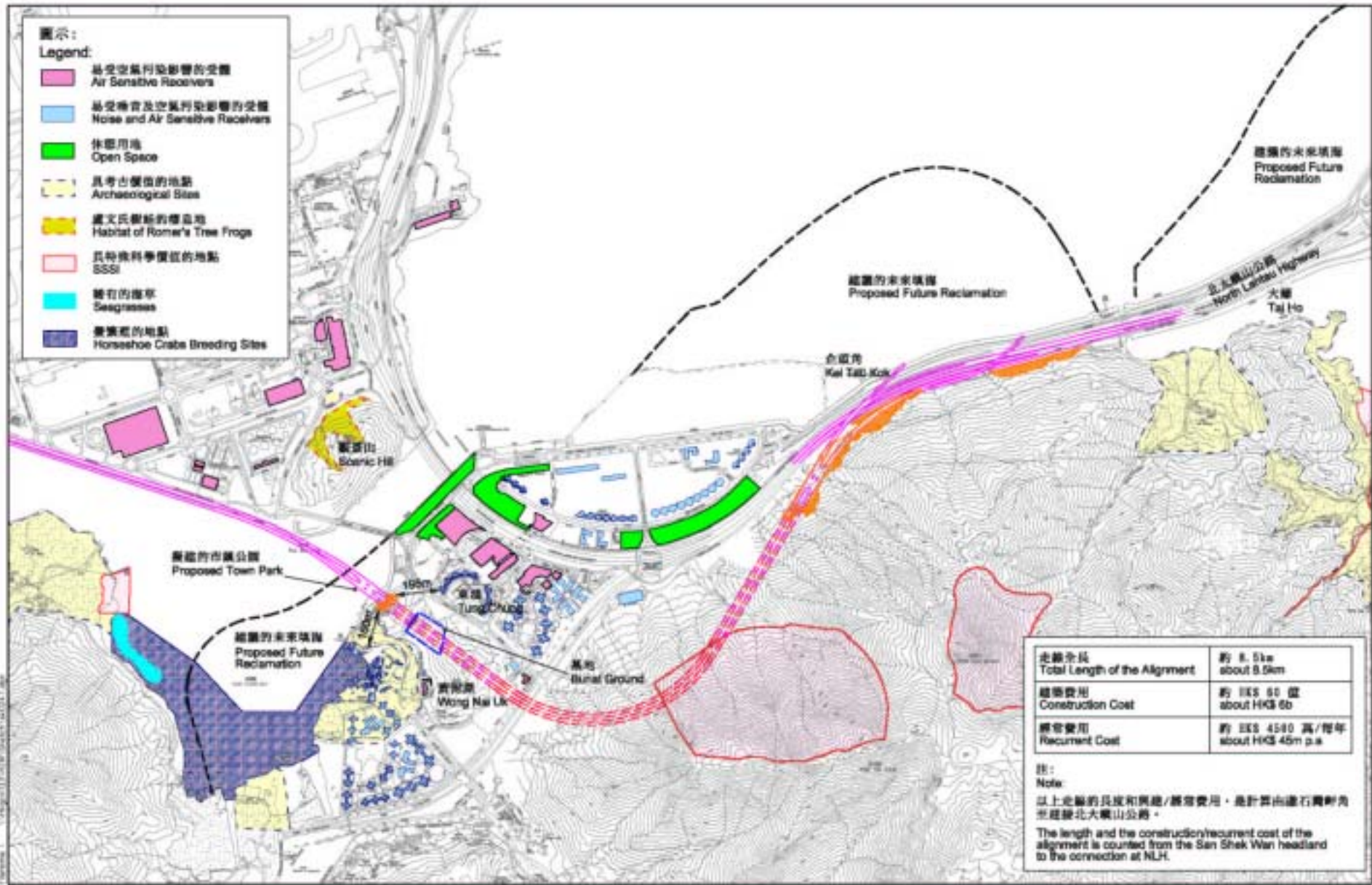
顧問大綱 (香港) 為北大嶼山公路連接東涌和沙頭角研究
Agreement No. CE 26/2002 (ITF)
Hong Kong Section of Hong Kong - Zhuhai - Macao Bridge
and Connection with North Lantau Highway Investigation

圖則名稱
北大嶼山公路連接東涌 - 走廊方案 (c)
在東涌與東涌路北大嶼山公路
NLHC - Alignment Option (c)
Direct Connection at Tung Chung

| | | |
|---------|---------|---------|
| Drawn | SK | 06/2005 |
| Checked | SK | 10/2005 |
| Scale | 1:15000 | |

圖則編號
HZM/SK/0246

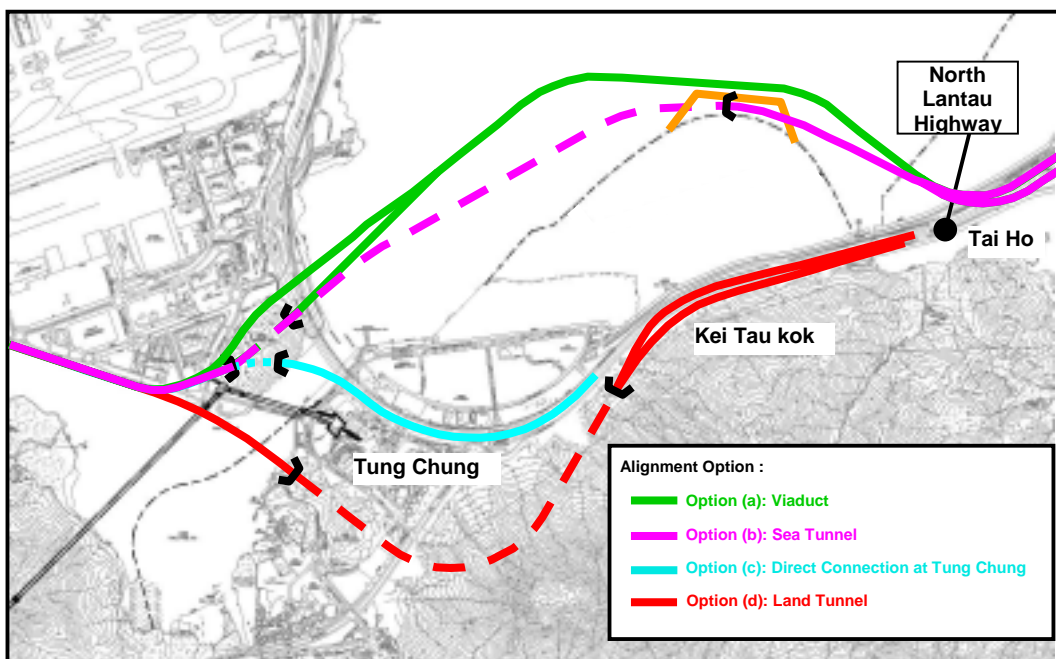
Rev. **A**



Prepared by: 1. 03-Jun-2005
 1. 03-Jun-2005
 1. 03-Jun-2005

North Lantau Highway Connection

Alignment Options (a) to (d) – Impacts on the Existing and Future North Lantau New Town Developments



| Alignment Option | Impacts on the Existing and Future North Lantau New Town Developments |
|------------------|---|
| Option (a) | <ul style="list-style-type: none"> This alignment option will be at a distance from the existing New Town and the future New Town extension area, but it will still have some visual impact on these developments, in particular to the coastal residential developments. |
| Option (b) | <ul style="list-style-type: none"> This alignment option will be at a distance from the existing New Town and the future New Town extension area, thus it will not have any significant impacts on these developments. The artificial island required by this alignment option will need to integrate with the proposed land uses. |
| Option (c) | <ul style="list-style-type: none"> As this alignment option will directly bring the traffic to North Lantau Highway near the Town Centre, it will cause significant impacts, including air and noise impacts, to the adjacent residential development. This alignment option will require permanent closure of two slip roads connecting North Lantau Highway near the Town Centre. Vehicles to/from Tung Chung Waterfront Road will have to use Tung Chung Eastern Interchange and Yi Tung Road /Yu Tung Road instead. The existing Tung Chung Interchange will need to be modified to accommodate additional lanes for traffic merging. The traffic at the interchange will be temporarily affected during construction stage. During construction stage, the traffic to and from the airport will be affected. |
| Option (d) | <ul style="list-style-type: none"> This alignment option will affect a number of features including a pavilion and about 260 graves on the Wong Nai Uk hill, a portion of the proposed town park and a portion of site planned for the future Tung Chung hospital (Tung Chung Area 13). The elevated road and the piers for the viaduct will affect about 10% of the proposed town park area. And the area adjacent to the alignment will not be suitable for recreation purposes. The associated tunnelling work will impose restriction on the construction of the future Tung Chung hospital. |